Placental cord drainage after vaginal delivery as a part of management of third stage of labour

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Background

Management of 3rd stage of labour with its unpredictable life threaten complication has been debated for centuries and still arouses much discussion.

There is some evidence that cord drainage of placental blood may reduce the duration of 3rd stage of labour and the need for manual removal of placenta.

Aim of the study

To evaluate the effectiveness of placental blood drainage via the umbilical cord in reducing the duration and blood loss in 3rd stage of labour and the incidence of PPH.

Method

A prospective study involving 200 women having vaginal delivery were divided into drainage group(100 women) and control group (100 women) .

The main outcome measures were duration of 3rd stage and amount of blood loss .

Result

The mean duration of 3rd stage was (5.35 ± 2.3 minutes) in the study group and (8.9 ± 4.9 minutes) in control group. The average blood loss was (184.3 ± 118 ml) in the study group and (249.7 ± 147 ml) in control group. Retained placenta was reported in only two cases of control group which needed manual removal of placenta.

One case of postpartum hemorrhage due to inertia required blood transfusion was reported in the control group.

Conclusion

Placental cord drainage is simple ,safe, and non invasive method in reducing the duration and blood loss in 3rd stage of labour thereby preventing PPH.

Introduction

The 3rd stage of labour refers to the interval from delivery of the fetus to the separation and expulsion of the placenta.

The major complication associated with this period is postpartum hemorrhage which is the most common cause of maternal morbidity and mortality in developing countries.

Even in developed countries although maternal mortality rates are much lower, postpartum hemorrhage remains major concern. [(1)]

Numerous factors lead to increase incidence of postpartum hemorrhage like prolonged labour, multifetal gestation, large baby, anemia, eclampsia and operative vaginal delivery.

However two third of pph cases occur in women with no known risk factors hence all pregnant women at risk for this catastrophic event.[(2)]

The third stage of labour is generally managed using two different approaches: active and physiological or expectant management.

The active management involves administration of oxytocic drugs, clamping and cutting the cord as well as controlled cord traction.

The physiological or expectant mainly involves maternal effort assisted by gravity or putting the baby to the breast without using artificial oxytocine or early clamping or controlled cord traction[(3)].

In women at low risk of pph many studies have suggested that active pharmacological management does not reduce blood loss when compared with physiological management [(4)].

Active management was however associated with an increase of unpleasant side effects as nausea and vomiting and hypertension when ergometrine were used [(5)].

In the management of 3rd stage nowadays it is a common practice to clamp both sides of the cord and cutting it then wait until there are signs of placental separation then deliver the placenta by controlled cord traction (brandet Andrews maneuver)[(6)]

Un clamping the cord at maternal side and releasing of placental blood has been suggested for facilitating delivery of the placenta it is

physiologically plausible that draining blood from the placenta would reduce its bulkiness allowing the uterus to contract and retract effectively leading to delivery of placenta and may reduce the duration of 3rd stage of labour.[6]

Cord drainage in 3rd stage of labour involves unclamping the previously clamped and separated umbilical cord and allowing the blood from the placenta to drain freely into appropriate receptacles.[7]

Aim of the study

To assess the effect of placental cord drainage on the duration of 3rd stage of labour and to clarify the safety of this method regarding to postpartum hemorrhage, retained placenta, incidence of manual removal of placenta and the need for blood transfusion.

Materials and methods

Study design and setting

Prospective study conducted at Babylon teaching hospital for maternity and pediatrics throughout the period between Jan –July 2010.

The study involves 200 women in their 3rd stage of labour after uncomplicated vaginal delivery.

Inclusion criteria

-uncomplicated singleton pregnancy

-pregnancy with vertex presentation.

- Patients expected to have spontaneous vaginal delivery.

- Multipara less than 5.

Exclusion criteria

-induced labour

-previous history of pph

- Hemoglobin less than 10 g/dl

-Ante partum hemorrhage

-Multiple pregnancies

-Instrumental delivery

-Known coagulation disorder

-Over distended uterus (hydramnios. Large fetus)

After a detailed history taken general physical and obstetric examination were performed. Informed consent was taken from those who fulfilled the inclusion criteria. Once the women delivered vaginally they divided into two groups (study and control).

In the study group a of total number of 100 women placental end of the cut umbilical cord 1st clamed for few seconds and then unclamped and left open to drain blood in a vessel until flow ceased. This will prevent the drained blood from getting mixed with blood lost in the 3rd stage.

In the control group a total number of 100 women placental end of the cut umbilical cord will be kept clamped.

Blood loss in the 3rd stage of labour was measured using a plastic sheath which was used during delivery and the blood lost was collected.

Placenta will be delivered by controlled cord traction once signs of placental separation were seen intramuscular ergometrine will be given after delivery of placenta in both groups after exclusion of contraindications of its use. The duration of 3rd stage was calculated using a stopwatch.

The pulse rate, blood pressure and state of uterus were noted immediately the women were kept under observation for next one hour for any complications; blood transfusion will be given whenever indicated.

The primary outcome measures were the duration of 3rd stage of labour and the amount of blood loss.

Secondary outcome measures were the incidence of retained placenta, manual removal of placenta, postpartum hemorrhage and need for blood transfusion.

t-test was used for statistical analysis.

Results

Both study and control groups were comparable regarding their age, gravity, parity, number of miscarriage and gestational age. Table (1)

The mean age in study group was (26.5±5.8) and (27.9±5.1) year in control group.

Gestational age was (39±1) weeks in study group and (38.9±1) weeks in control group

Labour was spontaneous in 67% of study group and 54 % in control group and accelerated in 33% of study group and 46% in control group.

Table (1) demographic criteria of study and control groups

Parameters	Study group N=100	Control group N=100	p- value
Age (years)	26.5±5.8 *	27.9±5.1	0.02
Parity	2.2±1.9	2±1.6	0.3
Miscarriage	0.8±0.9 *	0.93±0.9	0.3
Gestational age(wks)	39±1 *	38.9±1	0.4
Spontaneous labour(no.)	67	54	0.06
Accelerated labour(no.)	33	46	0.06
Hemoglobin level gm/dl	11.7±1.3	12.4±1.2	0.09

mean±SD

Outcome of the study

The average duration of 3rd stage of labour was 5.35±2.3 minutes in study group and 8.9±4.9 minutes in control group. This difference was highly significant ($p< 0.001$).

The average 3rd stage blood loss was 184.3±118 ml in the study group and 249.7±147 ml in the control group. This difference was highly significant ($p<0.001$).

There were two cases of retained placenta that required manual removal in the control group, no such cases reported in the study group.

One case of postpartum hemorrhage due to inertia was reported in control group and required blood transfusion.

No reported cases of postpartum hemorrhage in the study group.

Table (2) the outcome of the study

Parameters	Study group N=100	Control group N=100	p- value
length of 3rd stage (minutes)	5.35 ± 2.3	8.9 ±4.9	0.000001
Blood loss (ml)	184.3 ± 118	249.7 ± 147	0.0006
Retained placenta (no.)	0	2	0.1
Manual removal of placenta(no.)	0	2	0.15
Postpartum hemorrhage(no.)	0	1	0.31
Blood transfusion(no.)	0	1	0.31

Discussion

The 3rd stage of labour begins immediately after the birth of the baby and ends with the expulsion of the placenta and fetal membranes; it is preceded by a sudden reduction of uterine size and concurrent contraction and retraction of the uterus.

Reduced uterine size and limited placental elasticity and a tight compression by the uterus lead to separation of the placenta from the spongy deciduas (lining of the uterus).[7]

The 3rd stage of labour is always a time of anxiety as the normal case can within minutes become abnormal and successful delivery can swiftly turn into maternal mortality.

The commonest cause of maternal mortality is postpartum hemorrhage which account for about 25-30% of maternal mortality.[2] Most of these deaths are due to postpartum hemorrhage resulting from atonic uterus [8].

The main purpose of this study was to assess the effect of placental cord drainage on the duration of 3rd stage of labour.

The secondary objective is to clarify the safety of this method regarding pph, retained placenta, incidence of manual removal of placenta and need for blood transfusion.

Razmkhah in 1999 1st reported the duration of 3rd stage of labour was significantly shorter when using the placental cord drainage method similar result was reported by other investigators.[4,5] However one study[9] found no extrabenefit from placental cord drainage.

Regarding postpartum complication, most studies found no significant increase in complication.[5,7].

However postpartum hemorrhage increase in one study.[9]

The practice of placental cord drainage was not spread in many countries except in Belgium where it was policy in 32% of maternity unite and Portugal when it was a policy in 24 %[10].

Giacalone reported a randomized study comparing 239 women who had placental cord drainage with 238 women with expectant delivery of the placenta. The median value of duration of 3rd stage of labour was 8 minutes in cord drainage group and 15 minutes in the control group.[4]

Gulati et al studied 200 women to evaluate placental blood drainage during vaginal delivery as a method of shortening the duration of 3rd stage and reducing the amount of blood loss and concluded that duration of 3rd stage of labour in the control group was 5.72 minutes and in the study group it was 2.94 minutes, the amount of blood lost in the 3rd stage was 247.59 ml in the

control group and 193.63 ml in the study group. Incidence of pph was 12% in the control and 6% in the study group. Retained placenta was observed in 4% in the control group and 0% in the study group.[11]

Sharma et al reported a study on 958 women having vaginal delivery, who were randomized to the drainage method (478 women) or control cord traction method (480 women) for placental delivery .the mean duration of 3rd stage of labour was 3.24 minutes and 3.2 minutes in the placental drainage group in contrast to 8.57 minutes and 6.2 minutes in controlled cord traction method in primigravida and multigravida respectively.[5]

The Cochrane data base of systematic review studied the effect of placental cord drainage on the 3rd stage of labour and concluded that cord drainage result in statistically significant reduction in the length of 3rd stage of labour[7].

In our study we found that the duration of 3rd stage was (5.35$\pm$2.3) minutes in study group and (8.9$\pm$4.9) minutes in control group. The amount of blood loss was (184.3$\pm$118) ml in study group and (249.7$\pm$147) ml in control group.

Shravage J and Silpa P in their study found that the duration of 3rd stage was 5 minutes in the study group and 7.4 minutes in the control group. The average blood loss was 175 ml in the study group and 252 ml in the control group this result was comparable with our study.

. The incidence of pph was less in the study group (3% vs. 10%) none of women required blood transfusion[2]. In our study only one case of postpartum hemorrhage due to inertia reported in control group .

Giacalone in his study found that no significant difference between 2 groups with regard to the incidence of manual removal of retained placenta or pph[4]

In our study the incidence of manual removal of placenta found to be zero in study group compared with 2 % of control group. Blood transfusion required for only one case of control group while it was not required for study group.

There is some evidence that placental cord drainage may reduce fetomaternal transfusion which can occur with placental separation as there is small risk that the baby's blood cells may get into the mother circulation and stimulate antibody production (isoimmunization)[12,13]

Regarding the placental cord drainage data from study done by piphat and sackna revealed that there was no pph ,uterine atony,hypovolemic shock in neither group (study and control)[6]

Conclusion

Placental blood drainage is simple, safe and non invasive method which reduces duration and blood loss of 3rd stage of labour thereby preventing postpartum hemorrhage.

Recommendations

- Further investigation of the effect of cord drainage on the maternal and neonatal outcome is needed.

- placental cord drainage should be encouraged for management of 3rd stage of labour when no routine drug administration is planned because it is safe noninvasive and not requiring any effort ,cost or equipments and this is relevant in rural areas.

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الخلاصة

دراسة تقدمية أجريت في مستشفى بابل للولادة والأطفال للفترة من كانون الثاني ولغاية تموز عام 2010 ,تضمنت الدراسة 200 امرأة في المرحلة الثالثة للولادة بعد الولادة المهبلية غير المعقدة.

تم تقسيم النساء إلى مجموعتين ,المجموعة الأولى تضمنت 100 امرأة (مجموعة الدراسة) تم تثبيت الحبل السري لمدة ثواني قليلة ,ثم عدم تثبيته .المجموعة الثانية تضمنت 100امرأة (مجموعة السيطرة) تم فيها تثبيت الحبل السري .

أظهرت الدراسة إن معدل مدة المرحلة الثالثة للولادة هو 5.35±2.5 دقيقة في مجموعة الدراسة ,و 4.9 ±8.9 دقيقة في مجموعة السيطرة ,وإن هذا الفرق ذو مغزى إحصائي كبير .

إن معدل كمية الدم المفقود في المرحلة الثالثة للولادة كان 118 ± 184.3مل في مجموعة الدراسة , و 147 ±249.7 مل في مجموعة السيطرة ,وإن هذا الفرق ذو مغزى إحصائي كبير أيضا .

كان هناك حالتين من المشيمة المتبقية والتي احتاجت إزالة المشيمة يدويا في مجموعة السيطرة فقط .وقد تم نقل الدم لمريضة واحدة فقط في مجموعة السيطرة بسبب النزف الرحمي لعدم تقلص الرحم .

استنتج من هذه الدراسة إن تفريغ الدم للمشيمة تعتبر طريقة بسيطة ,أمينة وغير مخترقة والتي تقلل مدة وكمية الدم المفقود في المرحلة الثالثة للولادة ,وبذلك تمنع النزف الرحمي بعد الولادة.